UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,847	04/18/2005	Matthias Mrzyglod	2002P01123WOUS	4073

46726 7590 04/07/2008

BSH HOME APPLIANCES CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
100 BOSCH BOULEVARD
NEW BERN, NC 28562

EXAMINER	
STIMPERT, PHILIP EARL	

ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
04/07/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,847	MRZYGLOD, MATTHIAS	
	Examiner	Art Unit	
	Philip Stimpert	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11 and 13-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11 and 13-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: amended claim 11 recites “interleaved, generally cylindrical walls.” The term "interleaved" is not used in the specification, and thus lacks clear antecedent basis.

Claim Objections

2. Amended claim 11 is objected to for failing to comply with 37 CFR 121(c). In particular, the recitation in line 20 of “, said sound restrictor element” is not underlined, but is new in the claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 11, 13-16, 19-22, and 24-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Terauchi (EP 0509660) in view of Hur et al.

5. Regarding claim 11, Terauchi teaches a linear compressor unit comprising an electromagnetic alternating field (generated by magnetic field coil 10) surrounding at least a portion of a cylinder (15), a magnet (11a, 11b, or 11c) located in the electromagnetic alternating field in the cylinder (15), the magnet displaceable back and

forth in the electromagnetic alternating field, a piston (12-14) located in the electromagnetic alternating field in the cylinder (15) drivingly connected to the magnet. Terauchi further teaches a buffer volume (27), a module casing (1) enclosing the cylinder (15) and the buffer volume (27), and that the cylinder (15) is mounted in the module casing (1) so that the cylinder (15) can oscillate in the module casing (col. 2, ln. 6-8, absorption implies that some amount of reciprocation does occur). Terauchi further teaches the module casing including an inlet passage (2) for the medium to be compressed, as well as that the cylinder includes an inlet opening (28) lying opposite the inlet passage (2) without making contact with it. Terauchi teaches neither a passage (28) to the buffer volume (27) formed between the inlet opening (181) and the inlet passage (2), nor a sound restrictor element located in the buffer volume passage. Hur et al. teach a sound restrictor element (400) for use in the intake flow path of a linear compressor, in particular between relatively reciprocating elements. Hur et al. state that their suction induction member 400 is useful "for… guiding the suction of the refrigerant gas and secondly decreasing noise during the suction of the refrigerant gas," (col. 9, ln. 61-63). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine a suction induction member as taught by Hur et al. with the compressor of Terauchi in order to decrease the noise of suction during operation of the compressor. This suction induction member, formed in attachment or as a part of the inlet opening (28) and generally proceeding between inlet opening (28) and an inlet passage (2, the position of which would be changed to accommodate the combination) would comprise a passage to the buffer volume, and would constitute a

sound restrictor element located in that buffer volume passage. Hur et al. teach the limitation that the sound restrictor has a plurality of interleaved walls (Hur et al., 402 and 410 as shown particularly in Fig. 13), a first group of walls (410) attached to a casing (450) and the second group of walls (indicated at 400 and partially surrounding 410 at one end of one of the walls of the group) attached to the piston (40), wherein the piston (40) reciprocates relative to the casing (450). It would therefore be obvious in the combination to provide the intermeshing walls of the suction induction member in such a fashion that the first set of walls were attached to the module casing (1) of Terauchi and the second set of walls were attached to the cylinder, since the cylinder reciprocates relative to the module casing (1). Also as taught by Hur et al., the two groups of walls relatively reciprocate while remaining interleaved.

6. Regarding claim 13, Hur et al. teach that their intermeshing walls are ring shaped and surround the inlet passage.

7. Regarding claim 14, Terauchi teaches that the cylinder (15) includes a chamber (22) for receiving the piston (12-14) and a further chamber (25) through which the medium to be compressed flows, arranged between the inlet opening (28) and the piston chamber (22). Terauchi does not explicitly disclose that this chamber has sound-dampening functionality, but given the teachings of sound-dampening chambers present in the suction induction member (400) of Hur et al. and the knowledge of one of ordinary skill in the art, it would have been obvious to form the chamber (25) such that it would constitute a sound-dampening chamber.

8. Regarding claim 15, Hur et al. teach that their suction induction member includes a sound-dampening chamber (412) which, according to the combination, constitutes part of the inlet passage of the module casing.

9. Regarding claim 16, Hur et al. teach that the sound-dampening chamber (412) is formed in a flat-cylindrical shape with a cylindrical axis opening and the inlet passage of the module casing is substantially aligned therewith.

10. Regarding claim 19, Terauchi teaches that the magnet (11a, 11b, or 11c) is formed as an axial extension of a portion (12) of the piston.

11. Regarding claim 20, Terauchi teaches that the magnet (11a, 11b, or 11c) is formed as a ring shaped body at least partially surrounding the piston (12-14) and connected thereto at an end (12) of the piston.

12. Regarding claim 21, Terauchi teaches a linear compressor unit comprising an electromagnetic alternating field (generated by magnetic field coil 10) surrounding at least a portion of a cylinder (15), a magnet (11a, 11b, or 11c) located in the electromagnetic alternating field in the cylinder (15), the magnet displaceable back and forth in the electromagnetic alternating field, a piston (12-14) located in the electromagnetic alternating field in the cylinder (15) drivingly connected to the magnet. Terauchi further teaches a buffer volume (27), a module casing (1) enclosing the cylinder (15) and the buffer volume (27), and that the cylinder (15) is mounted in the module casing (1) so that the cylinder (15) can oscillate in the module casing (col. 2, ln. 6-8, absorption implies that some amount of reciprocation does occur). Terauchi further teaches the module casing including an inlet passage (2) for the medium to be

compressed, as well as that the cylinder includes an inlet opening (28) lying opposite the inlet passage (2) without making contact with it. Terauchi also teaches that the cylinder includes an inlet opening (28) lying opposite the inlet passage without making contact therewith, the cylinder including a chamber (22) for receiving the piston (12-14) and a second sound-dampening chamber (25, as discussed in above rejection of claim 14) through which the medium to be compressed flows, the second sound-dampening chamber arranged between the inlet opening (28) and the piston chamber (22). The combined references teach a passage to the buffer volume formed between the inlet opening (28) and the inlet passage, as well as a sound restrictor element located in the buffer volume passage consisting of a plurality of intermeshing walls, a first group of walls attached to the module casing (1), a second group of walls attached to the cylinder (15), the intermeshing walls being formed in a generally cylindrical shape (as shown in Fig. 13 of Hur et al.) and surrounding the inlet passage. The combined references also teach the limitation of a first sound-dampening chamber (Hur et al. 410) in the inlet passage through which the medium to be compressed flows.

13. Regarding claim 22, Hur et al. teach that the first sound-dampening chamber (410) is formed in a flat-cylindrical shape with a cylindrical axis opening and the inlet passage of the module casing is substantially aligned therewith according to the combination.

14. Regarding claim 24, Terauchi teaches that the magnet (11a, 11b, or 11c) is formed as an axial extension of a portion (12) of the piston.

15. Regarding claim 25, Terauchi teaches that the magnet (11a, 11b, or 11c) is formed as a ring shaped body at least partially surrounding the piston (12-14) and connected thereto at an end (12) of the piston.

16. Claims 17-18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terauchi in view of Hur et al. as applied to claim 11 above, and further in view of Kawahara et al. (US 6,273,688) and Bohlmann et al. (US 6,273,688).

17. Regarding claims 17-18 and 23, the previously combined references do not teach the limitation of the cylinder being mounted for oscillation in the module casing by a cylinder outlet pipe, nor that the cylinder outlet pipe is helically formed around the cylinder. Bohlmann et al. teach a muffler assembly which in particular includes a helical exhaust pipe, stating that "low inherent frequencies are obtained… by increasing the pipe length" and teach, in Fig. 5, a structure for accomplishing that increase in pipe length, namely to form the exhaust pipe helically. Kawahara et al. teach the use of a helically formed cylinder outlet pipe in a linear compressor. In particular, Kawahara et al. teach that "by winding the discharge tube into a spring shape and by increasing the spring constant of the supporting mechanism greater than that of the discharge tube, it is possible to enhance the resistance to vibration, and to shorten the overall length of the compressor, thereby reducing the compressor in size," (col. 6, ln. 53-58).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the compressor of the previously combined references with a cylinder outlet pipe formed helically around the cylinder and mounting the cylinder for oscillation in the module casing, in order to simultaneously increase the resistance to

vibration and muffle low inherent frequencies, while still maintaining a short overall length of the compressor.

Response to Arguments

18. Applicant's arguments, see page 6, filed 10 December 2007, with respect to the drawings have been fully considered and are persuasive. The objection to the drawings has been withdrawn.

19. Applicant's arguments, see pages 6-7, with respect to indefiniteness have been fully considered and are persuasive. The rejections of claims 11 and 13-25 under 35 U.S.C. 112 have been withdrawn.

20. Applicant's arguments, see page 6, with respect to the objection to the claims have been fully considered and are persuasive. The objections to claims 17 and 23 have been withdrawn. Please note however the new objection to claim 11 stated above.

21. Applicant's arguments, see page 7, with respect to anticipation of claims 11, 14-16, and 19-20 have been fully considered and are persuasive. The rejections of claims 11, 14-16, and 19-20 have been withdrawn.

22. Applicant's arguments with regard to the obviousness rejections of claims 11 and 13-25 have been fully considered but they are not persuasive.

23. Regarding claim 11 in particular, the only new limitation seems to be the requirement for interleavement with reciprocal motion between the first and second groups of walls. This does not define over the combination of Hur et al. and Terauchi, as is discussed above. To clarify, the suction induction member taught by Hur et al.

includes a two members (400 and 410 as shown in Fig. 13), each of which can be considered to consist of a group of walls. These walls intermesh, or interleave where their lengths overlap, also as shown in Fig. 13.

24. Regarding claim 21 in particular, the only new limitations appear to be “a plurality” instead of "a pair," and that the intermeshing walls are "generally cylindrical in shape." This also fails to define over the combination of Hur et al. and Terauchi. First, a pair is substantially a plurality, thus no significant narrowing in scope has taken place with this change. Second, the walls taught by the suction induction member of Hur et al. are generally cylindrical when considered as a whole.

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoakum et al. (US 1,496,508) discloses a muffling apparatus consisting of a set of concentric cylinders, Wedemeyer et al. (US 4,534,861) disclose a muffling apparatus consisting of several interleaved cylinders, and Huff et al. (US 5,952,625) disclose a muffling apparatus consisting of concentric cylinders defining a tortuous path.

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Stimpert whose telephone number is (571)270-1890. The examiner can normally be reached on Mon-Fri 7:30AM-4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/

Supervisory Patent Examiner, Art Unit 3683

/P. S./
Examiner, Art Unit 3746
31 March 2008